UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/679,487	10/04/2000	Srinath Hosur	TI-29755	7568

23494   7590   06/15/2005

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EXAMINER
AHN, SAM K

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/679,487	HOSUR ET AL.
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2005*.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14, 16-20, 22, 25, 26 and 28-36* is/are rejected.

7)☒ Claim(s) *15, 21, 23, 24, 27 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/20/00* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 01/31/05 have been fully considered but they are not persuasive. On page 12 of the remarks, the applicants argue that Sourour in view of Nystrom do not teach the newly added limitation of "not storing other correlation samples that do not exceed the threshold and are within the first time sample period".

The examiner respectfully disagrees. As explained in the previous office action, Sourour teaches a circuitry (17) for storing as a first set of correlation samples (C1 in Fig.6B) selected ones of the plurality of correlation samples that exceed the threshold (note col.4, line 57 – col.5, line 13) and are within a first time sample period (having a period of j, wherein j is incremented for each sample period of having 2N samples, note col.3, lines 57-67), wherein each of the correlation samples in the first set has a corresponding sample time (indexes, $R^j(i)$) relative to the first time sample period.

Sourour further illustrates in Fig.5 where samples are compared with n1 and n2 thresholds. H1 (Region Three) and H2 (Region Two) samples are stored (note col.4, line 57 – col.5, line 13). The samples in Region One are not stored and the process returns to receive the next 2N samples (46 in Fig.6A). Thus, samples exceeding the threshold (n1) are stored while samples not exceeding the threshold (n1) are not stored.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-10,13,14,16-18,20,22,25,26,28-32,35 and 36 are rejected under 35 U.S.C.

103(a) as being unpatentable over Sourour et al., USP 6,147,982 (Sourour) in view

of Nystrom et al, USP 6,526,091 B1 (Nystrom), cited previously.

Regarding claims 1 and 28, Sourour teaches a method and an apparatus of a

wireless receiver (see Fig.2), comprising: circuitry (14) for receiving a wireless

communicated signal (13), wherein the signal is a pseudo noise code (note col.1,

lines 10-26 wherein the signal received comprises PN code which is

synchronized with the locally generated PN code); circuitry (15) for correlating a

synchronization channel value to the signal to produce a plurality of correlation

samples (output of 15) in response to a correlation between the synchronization

channel value (C_{i+n}, see Fig.4) and the signal; circuitry (16) for comparing the

plurality of correlation sample to a threshold; circuitry (17) for storing as a first set

of correlation samples (C1 in Fig.6B) selected ones of the plurality of correlation

samples that exceed the threshold (note col.4, line 57 – col.5, line 13) and are

within a first time sample period (having a period of j, wherein j is incremented for

each sample period of having 2N samples, note col.3, lines 57-67), wherein each

of the correlation samples in the first set has a corresponding sample time

(indexes, $R^i(i)$) relative to the first time sample period; and circuitry for combining

(66 in Fig.6B, note col.5, lines 30-48) a second set of correlation samples with

the first set of correlation samples. Sourour further illustrates in Fig.5 where

samples are compared with n1 and n2 thresholds. H1 (Region Three) and H2

(Region Two) samples are stored (note col.4, line 57 – col.5, line 13). The

samples in Region One are not stored and the process returns to receive the

next 2N samples (46 in Fig.6A). Thus, samples exceeding the threshold (n1) are

stored while samples below the threshold (n1) are not stored.

However, Sourour does not explicitly teach wherein the signal of pseudo noise

code comprises a first synchronization channel component. Nystrom teaches

correlation of received signal wherein the signal transmitted in a synchronization

channel (SCH) comprises the first synchronization channel component (PSC),

which is spread by pseudo noise. (see Fig.3 and note col.5, lines 3-33)

Therefore, it would have been obvious to one skilled in the art at the time of the

invention to modify Sourour's system by transmitting and receiving the signal,

wherein the signal transmitted in the SCH channel comprising the first

synchronization channel component, for the purpose of improving

synchronization between remote terminals and base station, as taught by

Nystrom. (note col.3, lines 37-45)

Regarding claims 2 and 29, Sourour in view of Nystrom teach all subject matter

claimed, as applied to claim 1 or 28. Sourour further discloses wherein the

second set of correlation samples (C2 in 58 of Fig.6B) are within a second time

sample period (having equivalent time sample period as the first time sample

period of j); wherein each of the correlation samples in the second set has a

corresponding sample time relative to the second time sample period (see Fig.6B

wherein registers in C2 also has corresponding sample time or indexes); and

wherein the circuitry for combining comprises circuitry for combining each sample

in the second set of correlation samples with a relative sample in the first set of

correlation samples such that each combined sample time relative to the first and

second time sample periods (66 in Fig.6B and note col.5, lines 30-48).

Regarding claims 3 and 30, Sourour in view of Nystrom teach all subject matter

claimed, as applied to claim 1 or 28. As explained previously, Sourour in view of

Nystrom teach the signal transmitted and received in the synchronization

channel, and Nystrom further teaches wherein the synchronization channel

comprises a plurality of time slots (see Fig.3), and wherein each of the plurality of

time slots comprises a first synchronization channel component (PSC). And

although Sourour does not explicitly teach sample period of 14 (as taught by

Sourour, note col.3, lines 57-67), to be consistent with the sample period of 10,

one skilled in the art may be motivated to change the value of N to be 5, which

would allow the two systems to have equivalent sample periods, for the purpose

of properly transmitting signal at the synchronization channel. Thus, each of the

first and second time sample period has a duration equal to each of the plurality

of time slots.

Regarding claims 4-8, Sourour in view of Nystrom teach all subject matter

claimed, as applied to claim 3. Sourour further teaches wherein the plurality of

correlation samples consists of an integer number N correlation samples (2N),

wherein the selected ones of the plurality of correlation samples that exceed the

threshold consist of an integer number M selected ones of the plurality of

correlation samples (stored in the History Registers of 58 in Fig.6B), and wherein

integers H1 (see Fig.5, correlation values greater than n2 and within Region

Three), H2 (correlation values greater than n1 and within Region Two) and M

history set are selected depending on the available memory. (note col.4, lines 45

– col.5, line 13) Therefore, one skilled in the art would analyze that by setting

values of the thresholds (n1, n2) accordingly, different number of correlation

samples will be stored, wherein M is inherently less than N as the system stores

only correlation samples greater than the thresholds. However, Sourour does

not disclose expressly wherein the threshold is at a level such that M is

approximately one-half or one-tenth of N. At the time of the invention, it would

have been obvious to a person of ordinary skill in the art to set the thresholds

(H1, H2 and M) such that the number of correlation samples stored are one-half

or one-tenth of the received correlation samples. Applicant has not disclosed

that storing one-half or one-tenth correlation samples provides an advantage, is

used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, may have set the thresholds as such to result in storing only one-half or one-tenth of the correlation samples. Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify Sourour's teaching by adjusting the levels of H1, H2 and M such that the correlation samples stored are one-half or one-tenth correlation samples for the purpose of reducing memory consumption (note col.4, lines 50-54) and obtain the invention as specified in claims 4-8.

Regarding claims 9 and 31, Sourour in view of Nystrom teach all subject matter claimed, as applied to claim 1 or 28. Sourour further discloses wherein the step of combining comprises forming a sum by adding the first and second set of correlation samples. (66 in Fig.6B, note col.5, lines 30-48)

Regarding claims 10 and 32, Sourour in view of Nystrom teach all subject matter claimed, as applied to claim 9 or 31. Although Sourour does not explicitly teach dividing the sum by two, Sourour further teaches that the sum of the first and second set of correlation samples are divided by M+1. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to divide the sum by two. Applicant has not disclosed that averaging two sample periods provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have

expected Applicant's invention to perform equally well with dividing the samples

by M+1 when more timing samples are averaged because it may provide a better

estimate of the correlation values for synchronization. Therefore, it would have

been obvious to one of ordinary skill in this art to implement Sourour's teaching

by assigning M as one resulting in dividing the sum by two to obtain the invention

as specified in claims 10 and 32.

Regarding claims 13 and 35, Sourour in view of Nystrom teach all subject matter

claimed, as applied to claim 1 or 28. Sourour further discloses wherein each of

the plurality of correlation samples comprises an energy measure of a result of

the step of correlating a first synchronization channel value to the signal (see

Fig.5 and note col.4, lines 10-54).

Regarding claims 14 and 36, Sourour in view of Nystrom teach all subject matter

claimed, as applied to claim 1 or 28. Sourour further discloses wherein the

circuitry for combining a second set of correlation samples with the first set of

correlation samples produces a plurality of combined samples (output of 66 in

Fig.6B and note col.5, line 40-41); and further comprising circuitry for determining

a peak value in the plurality of combine samples (70 in Fig.6B); and circuitry for

determining a time position of the peak value (72 in Fig.6B). (note col.5, lines 30-

48)

Regarding claim 16, Sourour in view of Nystrom teach all subject matter claimed, as applied to claim 1. Sourour further teaches wherein the wireless receiver comprises a user station wireless receiver (see 12 in Fig.1).

Regarding claims 17 and 18, Sourour in view of Nystrom teach all subject matter claimed, as applied to claim 1. Sourour further teaches use of implementing the system using a code modulated communication system using direct sequence spread spectrum (note col.1, lines 10-26), however, Sourour does not explicitly teach wherein the wireless communicated signal comprises a CDMA TDD or FDD wireless communicated signal. Nystrom teaches implementing the system using code modulated communication system and further discloses supporting WCDMA, which inherently supports TDD and FDD signals. (note acol.6, lines 43-60) Therefore, it would have been obvious to one skilled in the art at the time of the invention to support WCDMA in Sourour's system for the purpose of supporting different signaling schemes and thus increase flexibility.

Regarding claims 20,22 and 26, Sourour in view of Nystrom teach all subject matter claimed, as applied to claim 1. Sourour further teaches wherein the threshold comprises a first threshold (n1), and second set of correlation samples are within a second time sample period (having equal time sample period as the first); wherein each of the correlation samples in the second set has a corresponding sample time relative to the second time sample period; wherein

the combining step produces a plurality of combined samples (output of 66) and

comprises combining each sample in the second set of correlation samples with

a respective sample in the set of correlation samples such that each combine

sample has a like sample time relative to the first and second time sample

period; and further comprising the steps of: determining a peak value in the

plurality of combining samples; and determining a time position of the peak

value. (see Fig.6B and note col.4, line 55 – col.5, line 48)

Regarding claim 25, Sourour in view of Nystrom teach all subject matter claimed,

as applied to claim 1. Sourour further teaches storing a sample time position

(indexes) for each sample in the first set of correlation samples. (note col.5, lines

14-60)

3. Claims 11,12,33 and 34, are rejected under 35 U.S.C. 103(a) as being unpatentable

over Sourour et al., USP 6,147,982 (Sourour) in view of Nystrom et al, USP

6,526,091 B1 (Nystrom), cited previously and Ahmed, USP 5,025,457.

Regarding claims 11,12,33 and 34, Sourour in view of Nystrom teach all subject

matter claimed, as applied to claim 1 or 28. Sourour, as explained previously,

teaches adding and dividing the first and second set. However, Sourour does not

explicitly teach wherein the step of combining forms a scaled average or a single

pole average (giving more weight to recent samples). Ahmed teaches receiving

a signal for synchronization and further teaches (see Fig.14) wherein previous

samples and current samples are added (146). The recent samples are given

more weight than the previous samples. (note col.13, line 60 – col.14, line 22)

Therefore, it would have been obvious to one skilled in the art at the time of the

invention to modify Sourour's averaging (in Fig.6B) to give more weight to C1

registers, which are the most recent samples for the purpose of performing an

exponential filtering, which is easier to implement, as taught by Ahmed. (note

col.14, lines 23-33)

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sourour et

al., USP 6,147,982 (Sourour) in view of Nystrom et al, USP 6,526,091 B1 (Nystrom),

cited previously and Raith, USP 5,930,706.

Regarding claim 19, Sourour in view of Nystrom teach all subject matter claimed,

as applied to claim 1. Sourour further teaches wherein the correlation samples

are compared with a different threshold when no samples are stored, since

threshold level is high. However, Sourour in view of Nystrom do not explicitly

teach the steps of measuring a level of noise in the signal, and setting the

threshold in response to the level of noise. Raith teaches detection of wireless

signal, and further teaches wherein a threshold is adjusted based on signal to

noise ratio (SNR). (note col.35, lines 54-55) Therefore, it would have been

obvious to one skilled in the art at the time of the invention to modify Sourour's

teaching by implementation of determining a SNR of the received signal for the

purpose of adjusting to the environment wherein the noise may affect

synchronization.

Allowable Subject Matter

5. Claims 15,21,23,24,27 and 37 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of

the limitations of the base claim and any intervening claims, and overcome the claim

objections.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory action

is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from

the mailing date of the advisory action. In no event, however, will the statutory

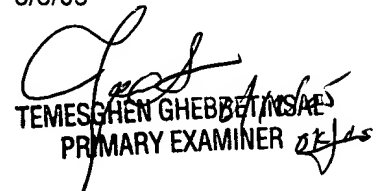period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
6/6/05

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